

EASTERN UNIVERSITY, SRILANKA
SECOND EXAMINATION IN SCIENCE – FIRST SEMESTER 2007/2008
 (December / January 2008)

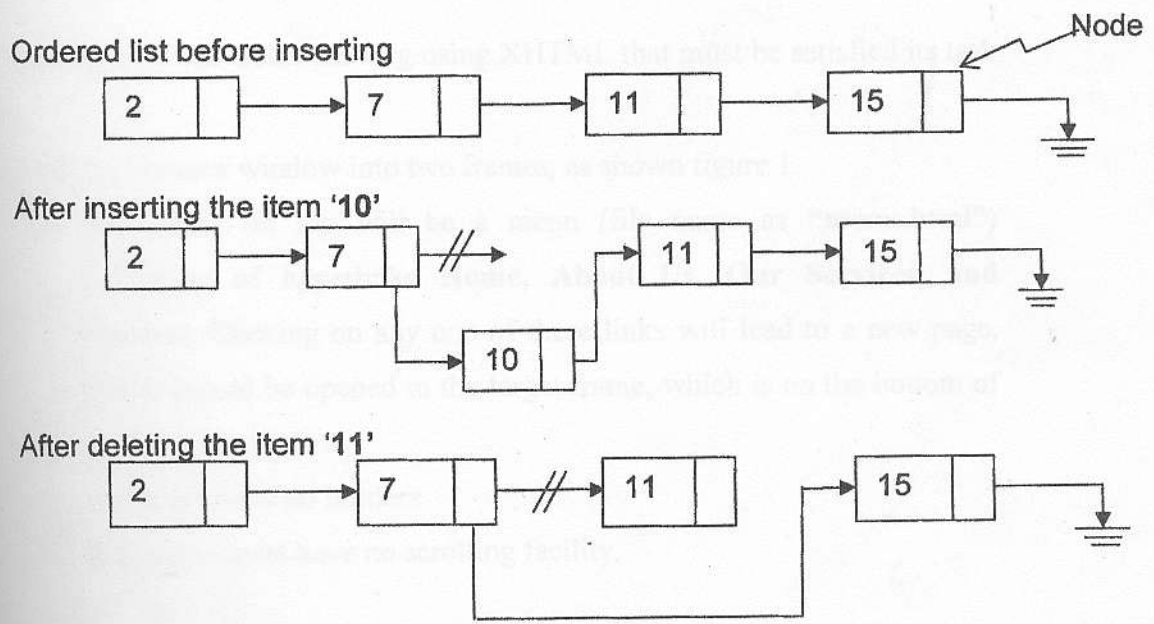
CS 251 – PRACTICAL WORK ON DATA STRUCTURE AND DESIGN OF ALGORITHMS
 (Proper and Repeat)

Answer only one Question

Time allowed: 2 Hours

Q1)

The ordered linked list, insert operation and deletion operation can be graphically represented as follows:

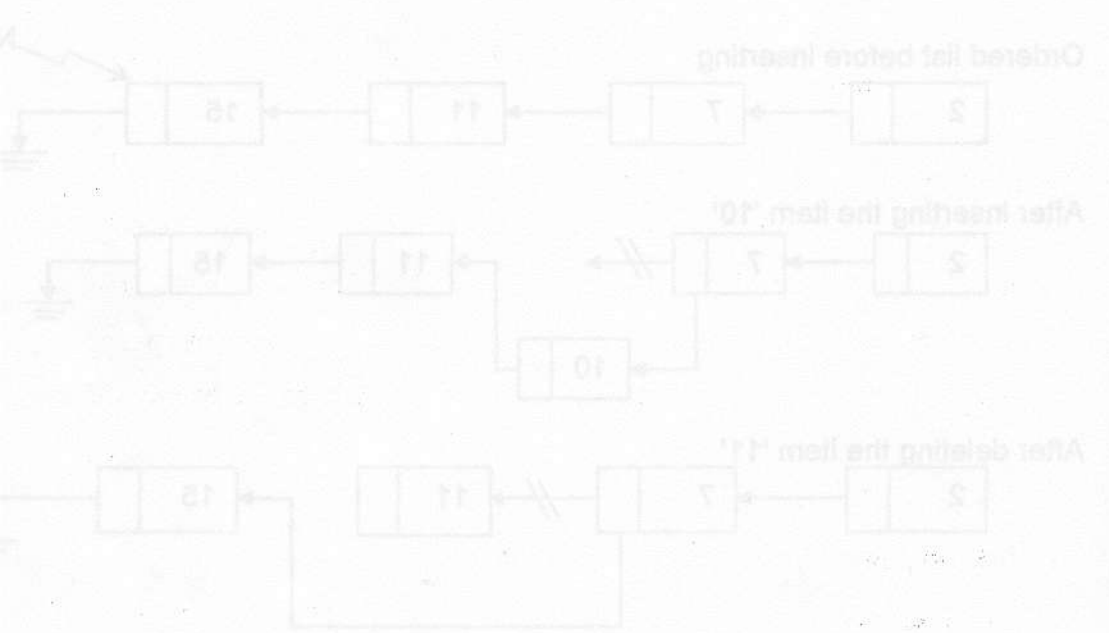


- a. Implement a **Node** class using the C++ programming language.
- b. Write C++ functions to do the following tasks:
 - i. to get a new node (**GetNode**);
 - ii. to insert a node at the front of the list (**InsertFront**);
 - iii. to place a node at the rear of the list (**InsertRear**);
 - iv. to insert an item into the ordered list (**Insert**);
 - v. to delete an item from the ordered list (**Delete**).
- c. Write a main program to test the above functions.

Q2)

- a. Implement the **Stack** and **Queue** data structures in C++ programming language using static array to represent the list of elements.
- b. Write a C++ program that reads an integer and verify whether the input is a palindrome using **Stack** and **Queue** data structures defined above.

(A palindrome is a string of characters that reads the same from left to right as from right to left. E.g.: NOON and MADAM are palindromes.)



Implement a Node class using the C++ programming language.

Write C++ functions to do the following tasks:

- i. to get a new node (GetNode);
- ii. to insert a node at the front of the list (InsertFront);
- iii. to insert a node at the rear of the list (InsertRear);
- iv. to insert an item into the ordered list (Insert);
- v. to delete an item from the ordered list (Delete).

Write a main program to test the above functions.